19. OBSERVATIONS ON THE FOOD OF YOUNG *HILSA ILISHA* (HAMILTON) AROUND NABADWIP, IN THE HOOGHLY ESTUARY

Although considerable knowledge has been gained on different aspects of the biology and fishery of *Hilsa ilisha*, (1963) not much is known on the food and feeding habits of the young *Hilsa*. Hence, an attempt was made to make a detailed analysis of the food of the young *Hilsa ilisha* around Nabadwip in the Hooghly estuary.

The material for the present investigations was obtained from the freshwater zone of the Hooghly in and around Nabadwip during March to June, 1966. 649 specimens of the young of *Hilsa ilisha* in the size range of 65 to 200 mm. (total length) were collected from regular fortnightly random samples and analysed for their gut contents. The fish in fresh condition, were either directly obtained from shore-seines (*Chat Berjal*) or from the Nabadwip fish market. They were preserved in 5% formaldehyde and the gut contents were analysed by the 'Occurrence' method, though it has some limitations. As the observations were of preliminary nature, other methods like volumetric analysis which could have pin-pointed the 'real optimal food' for the species, were not tried.

The relative abundance of various food items present in the gut contents of the young *Hilsa* has been found to be crustacea 26·71%, sand particles 23·50%, debris 18·39%, digested matter 15·49%, diatoms 13·35%, algae 0·50%, animal tissue 0·04% and bivalve larvae 0·01%. The data relating to monthwise fluctuations in the intensity of feeding as well as prevalence of various food items are presented in Table 1,

TABLE 1

PERCENTAGE PREVALENCE OF VARIOUS FOOD ITEMS DURING DIFFERENT MONTHS

	Crustacea (%)	Sand-particles (%)	Debris (%)	Digested matter (%)	Diatoms (%)	Algae (%)	Bivalve larvae (%)	Animal tissue (%)
March	36·54	21·16	14·58	22·72	3·21	1·69	0·04	0·06
April	28·86	27·95	22·93	14·32	5·82	0·03	0·05	0·04
May	Nil	23·33	57·50	14·17	5·00	..	..	..
June	0·30	5·00	3·55	10.00	81·15	..	..	..

from which it will be observed that marked variations in the intensity of feeding of the young *Hilsa* are evident during this period of four

months. Pillay & Rao (1962) have observed that from January to March feeding of young *Hilsa* of the river Godavari appears to be fairly intensive with the peak in February and March. They also observed that from April to July hardly any specimen was found to have eaten much food as most of them had empty stomachs or had only traces of food. The present observations reveal that, in the case of Hooghly young *Hilsa*, feeding appears to be fairly intensive in March and April. Monthwise percentage composition of the different degrees of fullness of stomachs is given in Table 2.

TABLE 2

MONTHLY FLUCTUATIONS IN THE INTENSITY OF FEEDING

	Full (%)	¾th Full (%)	½ Full (%)	¼ Full (%)	Traces (%)	Empty (%)
March ..	18·57	5·71	17·86	17·86	11·43	28·57
April ..	34·55	4·73	20·00	7·63	5·82	27·27
May ..	..	..	0·93	1·85	2·77	94·45
June ..	12·70	..	4·76	3·17	3·97	75·40

Hilsa is generally considered a plankton feeder, though Hora & Nair (1940 a & b) inferred that young *Hilsa* feed at the bottom, since sand grains were found in the stomachs. Pillay & Rao (1962) have concluded that *Hilsa* feeds at the bottom during the entire period of its life from at least 43 mm. stage, but they have also assumed that *Hilsa* feeds at all depths, as sand grains, debris, planktonic organisms etc. are found in appreciable quantities.

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20. ON THE MECHANISM OF ESCAPE BY A MOTH FROM ACCIDENTAL DROWNING

The use of surface tension of water and the hydrophobe and water repellant properties of the cuticle and cuticular processes by various aquatic insects for locomotion, and suspension from the surface film and for respiration under water has been explained by Wigglesworth (1966)[1] who has also mentioned that terrestrial insects make use of surface forces in order to cling to surfaces too smooth to provide a firm hold for the claws.

Terrestrial insects, under certain circumstances, may also take advantage of the above factors for their survival, as observed in the following case. A small unidentified moth, about a centimetre in length was found on the surface of water contained in a shallow vessel, about ten centimetres in diameter. The moth obviously, must have fallen into water accidentally. Its behaviour on the water surface was interesting. The insect was seen walking a few steps on the surface film and suddenly jumping and vibrating the wings, apparently trying to take off. It repeatedly fell back on water but remained on the surface without any active effort on its part. The moth finally succeeded after a jump, flew for a short distance and landed on the ground a few centimetres away from the vessel. The moth was caught and examined and no trace of water could be found on any part of the body.

The above observation shows how a terrestrial insect can take advantage of the surface tension of water and the hydrophobe properties of the cuticle to escape from accidental drowning.

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